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Test 888: Ford 3000 8-Speed (Gasoline)

Tractor Museum
University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

NEBRASKA TRACTOR TEST 888 - FORD 3000 8-SPEED GASOLINE

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Temperature Degrees F Air wet bulb	Temperature Degrees F Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours								
37.84	2100	3.257	0.524	11.62	190	64	76	28.917
Standard Power Take-off Speed (540 rpm)—One Hour								
34.62	1811	2.898	0.509	11.95	190	67	79	28.910
VARYING POWER AND FUEL CONSUMPTION—TWO HOURS								
33.70	2202	2.984	0.539	11.29	191	71	86	.....
0.00	2313	1.248	.....	.....	162	70	86	.....
17.22	2250	2.111	0.746	8.16	180	71	88	.....
37.33	2100	3.289	0.536	11.35	194	72	89	.....
8.71	2275	1.682	1.175	5.18	169	72	88	.....
25.56	2227	2.574	0.613	9.93	190	73	90	.....
Av 20.42	**2228**	**2.315**	**0.690**	**8.82**	**181**	**71**	**88**	**28.850**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Fuel Consumption Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Temp Degrees F Air wet bulb	Temp Degrees F Air dry bulb	Barom-eter inches of Mercury
VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST											
Maximum Available Power—Two Hours—4th Gear											
32.52	2481	4.92	2098	5.18	3.263	0.610	9.97	192	62	70	28.880
75% of Pull at Maximum Power—Ten Hours—4th Gear											
26.55	1877	5.30	2234	3.92	2.867	0.657	9.26	171	43	44	28.891
50% of Pull at Maximum Power—Two Hours—4th Gear											
19.35	1353	5.36	2231	2.75	2.359	0.742	8.20	175	63	72	28.835
MAXIMUM POWER WITH BALLAST											
27.53	5059	2.04	2187	13.94	2nd Gear			175	60	64	28.910
32.15	3407	3.54	2107	7.54	3rd Gear			189	60	64	28.910
32.81	2498	4.93	2105	5.31	4th Gear			184	62	66	28.885
33.21	2539	4.90	2098	5.36	5th Gear			190	62	66	28.890
32.34	1541	7.87	2101	3.15	6th Gear			184	60	68	28.900
29.37	820	13.43	2102	1.23	7th Gear			178	60	68	28.900
MAXIMUM POWER WITHOUT BALLAST											
32.93	2569	4.81	2101	8.38	4th Gear			180	39	41	29.080

VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST—4th Gear

Pounds pull	2498	2638	2636	2689	2718	2767	2641
Horsepower	32.81	30.72	27.36	24.58	21.21	19.77	13.81
Crankshaft speed, rpm	2105	1870	1668	1470	1258	1152	841
Miles per hour	4.93	4.37	3.89	3.43	2.93	2.68	1.96
Slip of drivers, %	5.31	5.47	5.58	5.69	5.90	5.90	5.80

TIRES, BALLAST and WEIGHT		With Ballast	Without Ballast
Rear tires	—No, size, ply & psi	Two 14.9-24; 4;14	Two 14.9-24; 4; 12
Ballast	—Liquid	640 lb each	None
	Cast iron	800 lb each	None
Front tires	—No, size, ply & psi	Two 6.00-16; 4; 32	Two 6.00-16; 4; 28
Ballast	—Liquid	None	None
	Cast iron	None	None
Height of drawbar		20 inches	22 inches
Static weight	—Rear	5130 lb	2250 lb
	Front	1690 lb	1670 lb
Total weight with operator		6995 lb	4095 lb

Department of Agricultural Engineering

Dates of Test: APRIL 20 TO APRIL 27, 1965

Manufacturer: FORD MOTOR COMPANY, BIRMINGHAM, MICHIGAN

FUEL, OIL and TIME Fuel regular gasoline **Octane No** Motor 85.2 Research 92.3 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.7308 **Weight per gallon** 6.083 **Oil** SAE 10W **API service classification** MS DM **To motor** 1.487 gal **Drained from motor** 1.390 gal **Transmission and final-drive lubricant** Ford Oil ESN-M2C-77A **Total time engine was operated** 41½ hours.

ENGINE Make Ford gasoline **Type** 3 cylinder vertical **Serial No** NG003215M4 **Crankshaft mounted** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.2" x 3.8" **Compression ratio** 8 to 1 **Displacement** 157.95 cu in **Carburetor size** 1¼" **Ignition system** battery **Cranking system** 12 volt electric **Lubrication** pressure **Air cleaner** dry type with pleated paper element **Oil filter** full flow replaceable cotton blend element **Fuel filter** edge type filter in sediment bowl **Muffler** was used **Cooling medium temperature control** thermostat.

CHASSIS Type standard **Serial No** C101954 **Tread width** rear 52" to 76" front 52" to 80" **Wheel base** 75.8" **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 32.8" Vertical distance above roadway 25.2" Horizontal distance from center of rear wheel tread 0" to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 1.5 second 2.3 third 3.8 fourth 5.0 fifth 5.0 sixth 8.0 seventh 13.4 eighth 18.3 reverse 2.3 and 8.4 **Clutch** single plate dry disc in combination with PTO clutch operated by single foot pedal **Brakes** internal expanding shoe operated by two foot pedals which can be locked **Steering** mechanical with power assist **Turning radius** (on concrete surface with brake applied) right 117" left 117" (on concrete surface without brake) right 129" left 129" **Turning space diameter** (on concrete surface with brake applied) right 240" left 240" (on concrete surface without brake) right 267" left 267" **Belt pulley** 1141 rpm at 2050 engine rpm diam 10.25" face 6.5" Belt speed 3061 fpm Power take-off 537 rpm at 1800 engine rpm.

REPAIRS and ADUSTMENTS No repairs or adjustments.

REMARKS All test results were determined from observed data obtained in accordance with the SAE and ASAE test code.

First gear was not run as it was necessary to limit the pull in second gear because of the stability formula. Eighth gear was not run because it exceeded 15 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 888.

L. F. LARSEN
Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman
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EXPLANATION OF TEST REPORT

GENERAL CONDITIONS

Each tractor is a production model equipped for common usage. Power consuming accessories can be disconnected only when it is convenient for the operator to do so in practice. Additional weight can be added as ballast if the manufacturer regularly supplies it for sale. The static tire loads and the inflation pressures must conform to recommendations in the Tire Standards published by the Society of Automotive Engineers.

PREPARATION FOR PERFORMANCE RUNS

The engine crankcase is drained and refilled with a measured amount of new oil conforming to specifications in the operators manual. The fuel used and the maintenance operations must also conform to the published information delivered with the tractor. The tractor is then limbered-up for 12 hours on drawbar work in accordance with the manufacturer's published recommendations. The manufacturer's representative is present to make appropriate decisions regarding mechanical adjustments.

The tractor is equipped with approximately the amount of added ballast that is used during maximum drawbar tests. The tire tread-bar height must be at least 65% of new tread height prior to the maximum power run.

BELT OR POWER TAKE-OFF PERFORMANCE

Maximum Power and Fuel Consumption. The manufacturer's representaitve makes carburetor, fuel pump, ignition and governor control settings which remain unchanged throughout all subsequent runs. The governor and the manually operated governor control lever is set to provide the high-idle speed specified by the manufacturer for maximum power. Maximum power is measured by connecting the belt pulley or the power take-off to a dynamometer. The dynamometer load is then gradually increased until the engine is operating at the rated speed specified by the manufacturer for maximum power. The corresponding fuel consumption is measured.

Varying Power and Fuel Consumption. Six different horsepower levels are used to show corresponding fuel consumption rates and how the governor causes the engine to react to the following changes in dynamometer load: 85% of the dynamometer torque at maximum power; minimum dynamometer torque, ½ the 85% torque; maximum power, ¼ and ¾ of the 85% torque. Since a tractor is generally subjected to varying loads the average of the results in this test serve well for predicting the fuel consumption of a tractor in general usage.

DRAWBAR PERFORMANCE

All engine adjustments are the same as those used in the belt or power take-off tests. If the manufacturer specifies a different rated crankshaft speed for drawbar operations, then the position of the manually operated governor control is changed to provide the high-idle speed specified by the manufacturer in the operating instructions.

Varying Power and Fuel Consumption With Ballast. The varying power runs are made to show the effect of speed-control devices (engine, governor, automatic transmission, etc.) on horsepower, speed and fuel consumption. These runs are made around the entire test course which has two 180 degree turns with a minimum radius of 50 feet. The drawbar pull is set at 3 different levels as follows: (1) as near to the pull at maximum power as possible and still have the tractor maintain the travel speed at maximum horsepower on the straight sections of the test course; (2) 75% of the pull at maximum power; and (3) 50% of the pull at maximum power. Prior to 1958, fuel consumption data (10 hour test) were shown only for the pull obtained at maximum power for tractors having torque converters and at 75% of the pull obtained at maximum power for gear-type tractors.

Maximum Power with Ballast. Maximum power is measured on straight level sections of the test course. Data are shown for not more than 12 different gears or travel speeds. Some gears or travel speeds may be omitted because of high slippage of the traction members or because the travel speed may exceed the safe-limit for the test course. The maximum safe speed for the Nebraska Test Course has been set at 15 miles per hour. The slippage limits have been set at 15% and 7% for pneumatic tires and steel tracks or lugs, respectively. Higher slippage gives widely varying results.

Maximum Power Without Ballast. All added ballast is removed from the tractor. The maximum drawbar power of the tractor is determined by the same procedure used for getting maximum power with ballast. The gear (or travel speed) is the same as that used in the 10-hour test.

Varying Power and Travel Speed with Ballast. Travel speeds corresponding to drawbar pulls beyond the maximum power range are obtained to show the "lugging ability" of the tractor. The run starts with the pull at maximum power; then additional drawbar pull is applied to cause decreasing speeds. The run is ended by one of three conditions: (1) maximum pull is obtained, (2) the maximum slippage limit is reached, or (3) some other operating limit is reached.

For additional information about the **Nebraska Tractor Tests** write to the **Department of Agricultural Engineering, University of Nebraska, Lincoln, Nebraska.**

Ford 3000 8-Speed Gasoline